WHAT IS CLAIMED IS:

1. A variable geometry turbocharger assembly comprising:

a turbine housing having an exhaust gas inlet and an outlet, a volute connected to the inlet, and a nozzle wall adjacent the volute;

a turbine wheel carried within the turbine housing and attached to a shaft;

a plurality of vanes disposed within the turbine housing between the exhaust gas inlet and turbine wheel, each vane comprising:

an inner airfoil surface oriented adjacent the turbine wheel;

an outer airfoil surface oriented opposite the inner airfoil surface, the inner and outer airfoil surfaces defining a vane airfoil thickness;

a leading edge positioned along a first inner and outer airfoil surface junction;

a trailing edge positioned along a second inner and outer airfoil surface junction; and

a hole disposed within a first axial vane surface substantially parallel to the nozzle wall for receiving a respective post therein, said post projecting from the nozzle wall towards the turbine wheel;

wherein the vane has an airfoil thickness that is greater than about 0.16 times a length of the vane as measured between the vane leading and trailing edges.

2. The variable geometry turbocharger assembly as recited in claim 1 wherein each vane has an airfoil thickness in the range of from about 0.16 to 0.50 times the length of the vane.

3. The variable geometry turbocharger assembly as recited in claim 1 wherein the inner airfoil surface comprises a convex surface portion and a concave surface portion moving from the vane leading edge to the vane trailing edge.

4. The variable geometry turbocharger assembly as recited in claim 1 wherein the outer airfoil surface comprises a convex surface having a radius of curvature that is less than about 0.8 times the vane length.

5. A variable geometry turbocharger assembly comprising:

a turbine housing having an exhaust gas inlet and an exhaust outlet, a volute connected to the inlet, and a nozzle wall adjacent the volute;

a turbine wheel carried within the turbine housing and attached to a shaft;

a plurality of vanes disposed within the turbine housing between the exhaust gas inlet and turbine wheel, each vane comprising:

an inner airfoil surface oriented adjacent the turbine wheel;

an outer airfoil surface oriented opposite the inner airfoil surface, the inner and outer airfoil surfaces defining a vane airfoil thickness;

a leading edge positioned along a first inner and outer airfoil surface junction;

a trailing edge positioned along a second inner and outer airfoil surface junction;

a hole disposed within a first axial vane surface substantially parallel to the nozzle wall for receiving a respective post therein, said post projecting from the nozzle wall towards the turbine wheel; and

an actuation tab extending from a second axial vane surface opposite from the first vane surface;

wherein the vane inner airfoil surface comprises a convex surface adjacent the leading edge and a concave surface adjacent the trailing edge, and wherein the vane airfoil thickness is in the range of about 0.16 to 0.50 times the vane length as measured between the leading and trailing edges; and

means for engaging each vane tab and rotating the vanes in unison within the turbine housing.

6. The variable geometry turbocharger assembly as recited in claim 5 wherein the outer airfoil surface comprises a convex surface having a radius of curvature that is less than about 0.8 times the vane length.

7. The variable geometry turbocharger assembly as recited in claim 6 wherein the outer airfoil surface comprises a convex surface having a radius of curvature that is in the range of from about 0.2 to 0.8 times the vane length.

8. A variable geometry turbocharger assembly comprising:

a turbine housing having an exhaust gas inlet and an exhaust gas outlet, a volute connected to the inlet, and an integral outer nozzle wall adjacent the volute, the nozzle wall comprising a plurality of posts projecting outwardly therefrom;

a turbine wheel carried within the turbine housing and attached to a shaft;

a plurality of vanes pivotably disposed within the turbine housing, each vane comprising:

an inner airfoil surface positioned adjacent the turbine wheel;

an outer airfoil surface positioned opposite the inner airfoil surface, the inner and outer airfoil surfaces defining a vane airfoil thickness;

a leading edge provided along a first inner and outer airfoil surface junction;

a trailing edge provided along a second inner and outer airfoil surface junction, wherein the airfoil thickness is at least about 0.16 times a length of the vane measured between the leading and trailing edges;

a hole disposed within an axial vane surface positioned substantially parallel to the integral outer nozzle wall, each vane hole accommodating placement of a respective post therein for providing pivoting vane movement, each vane further comprising an elongated actuation tab extending outwardly from an axial vane surface opposite from the holes;

an annular unison ring disposed within the turbine housing and positioned axially adjacent the axial vane surface of each vane providing the actuating tabs, the unison ring having a plurality of slots to accommodate a respective vane tab therein, wherein each slot is configured to provide nonrotating sliding movement of a respective tab therein; and

means for rotating the unison ring within the turbine housing along an axis running through the shaft, wherein rotation of the ring causes the tabs to slide within respective slots and cause the vanes to move radially inwardly or outwardly relative to the shaft, such radial vane movement being facilitated by the pivoting action of each vane about a respective post.

9. The variable geometry turbocharger assembly as recited in claim 8 wherein the inner airfoil surface has a convex surface portion adjacent the leading edge, and a concave surface portion adjacent the trailing edge.

10. The variable geometry turbocharger assembly as recited in claim 9 wherein the outer airfoil surface comprises a convex surface having a radius of curvature that is less than about 0.8 times the vane length.

11. A vane for use in a variable geometry turbocharger, the vane comprising:

an inner airfoil surface;

an outer airfoil surface oriented opposite the inner airfoil surface, the inner and outer airfoil surfaces defining a vane airfoil thickness;

a leading edge positioned along a first inner and outer airfoil surface junction; and

a trailing edge positioned along a second inner and outer airfoil surface junction;

wherein the vane has an airfoil thickness that is greater than about 0.16 times a length of the vane as measured between the vane leading and trailing edges.

12. The vane as recited in claim 11 wherein each vane has an airfoil thickness in the range of from about 0.16 to 0.50 times the length of the vane.

13. The vane as recited in claim 11 wherein the inner airfoil surface comprises a convex surface portion and a concave surface portion moving from the vane leading edge to the vane trailing edge.

14. The vane as recited in claim 11 wherein the outer airfoil surface comprises a convex surface having a radius of curvature that is less than about 0.8 times the vane length.

15. The vane as recited in claim 11 further comprising a hole disposed within a first axial vane surface substantially parallel to the nozzle wall for receiving a respective post therein.

16. The vane as reciyed in claim 15 further comprising an actuation tab extending from a second axial vane surface opposite from the hole.

17. A vane for use in a variable geometry turbocharger, the vane comprising:

an inner airfoil surface;

an outer airfoil surface oriented opposite the inner airfoil surface, the inner and outer airfoil surfaces defining a vane airfoil thickness;

a leading edge positioned along a first inner and outer airfoil surface junction; and

a trailing edge positioned along a second inner and outer airfoil surface junction;

a hole disposed within a first axial vane surface substantially parallel to the nozzle wall for receiving a respective post therein;

an actuation tab extending from a second axial vane surface opposite from the hole,

wherein the vane has an airfoil thickness that is greater than about 0.16 times a length of the vane as measured between the vane leading and trailing edges, and wherein the outer airfoil surface comprises a convex surface having a radius of curvature that is less than about 0.8 times a length of the vane.